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10/762,984	01/21/2004	G. Paul Koning	EQLC-P01-003	5998
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/762,984

Applicant(s)

KONING ET AL.

Examiner

Duc T. Doan

Art Unit

2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12, 14-21 and 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12, 14-21, 23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 3/22/05 5/8/07.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-23 are pending in the application.

Claims 1-23 are rejected

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 6-10, 12, 14-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau et al (US 2004/0080558).

As in claim 1, Blumenau discloses an apparatus for resource migration Fig 4, comprising a storage system having a plurality of storage servers (Fig 4: #401A, #401B servers) with a set of resources partitioned thereon (Fig 4: set of data in volumes),

Blumenau discloses said storage servers having a load monitor process capable of communicating with other load monitor processes for generating a measure of loading on respective ones of the plurality of servers (Blumenau's paragraphs 31-32 discloses the servers' processes communicate with each other using information in the state table #105 to execute properly any storage processes such as backup, copy, recover etc.

Blumenau in another embodiment teaches that the state information is configured with information to allow a load balance operation, thus the state information must include a measure of loading for servers and storage elements involved, see Blumenau's paragraph 64) ; It would have been obvious to one of ordinary skill in the art at the time of invention to include the load balance's information in the configuration table as suggested by Blumenau in Blumenau's system and allowing servers to transferring data to available storage location in storage system and thereby further utilize the resources in an efficiently manner.

Blumenau further discloses a resource migration process for transferring a resource from one of said plurality of servers to another of said plurality of servers in response to said measure of loading (see Blumenau's paragraph 64, migrate data from the storage system #402A to another storage system because performance reason, processor bound approaching its performance limit etc..) ; and

Blumenau further disclose a write-detect process which:

- (i) detects when a resource write request applies to a resource that is in the process of being moved from a first server to a second server, and which in response to such resource write request writes copies of the resource to both of said first and second server (Blumenau's paragraph 39, detecting the write requests to be applied to an area being migrated, in response to such write requests, write to both source and target volumes to insure consistency between the source and target volumes, see Blumenau's paragraph 40) and
- (ii) in response to a write failure on the second server, restarts the migration process for the resource to ensure that the write request is propagated to the second server (Blumenau's

paragraphs 39-40 discloses writing to both source and target volumes to ensure the write requests are received by both source and target volume. Blumenau's paragraphs 42 in an embodiment further discloses in response to a write failure, for example at the target, the write is not completed, the migration process is restarted "the DBMS will reissue the request").

As in claim 2, Blumenau further discloses wherein said servers are equivalent to each other (Blumenau's Fig 4, server #401A is equivalent to server #401B).

As in claim 3, Blumenau further discloses wherein said resources are selected from the group consisting of data blocks, program files, multimedia files, applications, and database files (Blumenau's paragraph 35 resources comprises files in file system, data of data bases etc..).

As in claim 4, Blumenau further discloses wherein said measure of loading reflects both a storage system load and a server load (Blumenau's paragraph 64, measure of loading of a storage system comprises storage system approaching capacity, servers approaching its performance limits etc...).

As in claim 6, Blumenau further discloses wherein the load monitor includes a process to determine whether a server is servicing a disproportionate share of the client requests being handled by a server group (Blumenau's paragraph 64).

As in claim 7, Blumenau further discloses wherein the resource migration process includes a block data migration process (Blumenau's paragraphs 50-51, migration of block of data, a unit of storage, a location on the disk).

As in claim 8, Blumenau further discloses a routing table for tracking resources maintained on the system (Blumenau's Fig 3: #301 state information table to track resources routing among source and target volumes).

As in claim 9, Blumenau further discloses wherein a pointer to a resource is maintained during an access operation to provide continuous data access (Blumenau's paragraph 50, state information #310 includes indicator points to location of resource to provide for continuous data access).

As in claim 10, Blumenau further discloses wherein the load monitoring process monitors one or more of network traffic load, I/O request load, storage traffic pattern type (Paragraph 64, monitoring I/O request load to servers).

As in claim 12, Blumenau further discloses wherein the resource migration process divides the resource being moved into smaller subresources , and wherein the write-detect process:

(i) detects when a resource write request applies to a subresource that is in the process of being moved from a first server to a second server, and in response to such resource write request writes copies of the subresource to both of said first and second server, and

(ii) wherein restarting the migration comprises restarting the migration for the subresource

(Claim 12 is rejected based on the same reason as of claim 1. Blumenau's paragraph 50 further discloses the state information #301 can be easily configured to include state information for any data granularity (volume, data blocks, groups of data blocks, a track or any portion of data..)) .

As in claim 14, Blumenau discloses a process for moving resources across a storage system having a plurality of storage servers (Fig 4: #401A, #401B servers) with a set of resources partitioned thereon (Fig 4: set of data in volumes), comprising the steps of

monitoring a load on a server and communicating with other load monitor processes for generating a measure of loading on respective ones of the plurality of servers;

Blumenau further discloses transferring, as a function of the measured loads, a resource from one of said plurality of servers to another of said plurality of servers in response to said measure of loading (Blumenau in another embodiment, paragraph 64 teaches a load balance data transferring, as a function of the measured requests to servers, data from a storage #402A is migrated to another storage system); and

Blumenau further disclose a write-detect process which:
detects when a resource write request applies to a resource that is in the process of being moved from a first server to a second server, and which in response to such resource write request writes copies of the resource to both of said first and second server (Blumenau's paragraph 39, detecting the write requests to be applied to an area being migrated, in response to such write requests, write to both source and target volumes to insure consistency between the source and target volumes, see Blumenau's paragraph 40) and
in response to a write failure on the second server, restarts the migration process for the resource to ensure that the write request is propagated to the second server (Blumenau's paragraphs 39-40 discloses writing to both source and target volumes to ensure the write requests are received by both source and target volume. Blumenau's paragraphs 42 in an embodiment further discloses in response to a write failure, for example at the target, the write is not completed, the migration process is restarted "the DBMS will reissue the request").

Claim 15 is rejected based on the same reasons as of claim 2.

Claim 16 is rejected based on the same reasons as of claim 4.

Claim 17 is rejected based on the same reasons as of claim 6.

Claim 18 is rejected based on the same reasons as of claim 7.

Claim 19 is rejected based on the same reasons as of claim 8.

Claim 20 is rejected based on the same reasons as of claim 10.

Claim 21 is rejected based on the same reasons as of claim 9.

Claim 23 is rejected based on the same reason as of claim 14. Blumenau's paragraph 50 further disclose the state information #301 can be easily configured to include state information for any data granularity (volume, data blocks, groups of data blocks, a track or any portion of data..).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau et al (US 2004/0080558) as applied to claim 1 and in view of Applicant's admitted prior art (APA).

As in claim 5, Blumenau does not expressly disclose the storage system is a Storage Area Network. However, APA's page 3 discloses storage devices are further configured as Storage Network Area. It would have been obvious to one of ordinary skill in the art at the time of invention to include the storage devices in SAN configuration as suggested by APA in Blumenau's system thereby further provide users of several networks can easily share data stored in a large high speed network storage system (APA's page 3).

Response to Arguments

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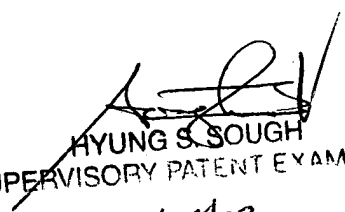
Applicant's arguments in response to the last office action has been fully considered but they are mooted in view of the new ground of rejections applied by Examiner.

Conclusion

When responding to the office action, Applicant is advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc T. Doan whose telephone number is 571-272-4171. The examiner can normally be reached on M-F 8:00 AM 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung S. Sough can be reached on 571-272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


HYUNG S. SOUGH
SUPERVISORY PATENT EXAMINER

12/18/07